

Attorney Docket: AT002

~~[0034][0030]~~ The present invention may, of course, be carried out in other specific ways than those herein set forth without parting from the spirit and essential characteristics of the invention. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, and all changes coming within the meanings and equivalency range of the appended Claims are intended to be embraced therein.

Amendments to the Claims:

This listing of claims will replace all prior version, and listings, of claims in the application.

Listing of Claims:

1. (Currently amended) A plant transfer and transplanting system comprising:
 - (a) a movable and/or stationary plant supply tray support/first table for holding receiving a plant supply tray that includes a plurality of plants, and wherein the first plant tray support/table includes a plurality of matrix opening(s) formed therein for through which permitting one or more plant(s) from the plant supply tray can to be removed pass from the plant supply tray plant-tray-set(s) through the opening(s) within the plant tray support/table;
 - (b) X-Y type an indexing frames movably mounted on over the first supply tray support/table for positioning/receiving, holding and indexing the plant supply tray such that the one or more plants from the plant supply tray are aligned with the plurality of matrix openings(s).
 - (c) a second movable and/or stationary support/table that holds a plant receiving

Attorney Docket: AT002

area for receiving multi-pots/ flats;

(d) a supporting frame for movably that holds and aligns the first and second tables relative to one another support upper and lower tables and other system components; and

(e) a plant removal mechanism for removing the one or more plants from the plant supply tray, movable and/or stationary set of pusher plates and a matching dibbler plates for dibbling and transplanting into an underlying the plant receiving ing-area,

wherein the supporting frame positions the first table above the second table such that the supply tray is located above the plant receiving area and the one or more plants removed from the supply tray can be transferred directly to the plant receiving area on the second table via the plurality of matrix openings in the first table.

2. (Currently amended) The plant transfer and transplanting system of claim 1 wherein the plant removal mechanism dislodging means includes a set of pusher rods attached coupled to a plate, wherein the set of pusher rods is arranged in a matrix formation that matches a matrix formation of the for a particular plants in the supply tray to dislodge a plurality of plants/seedlings/plugs from a supply tray, through the openings within the plant tray support plate in a matrix formation as the opening plate is moved upward or pusher plate is moved downward.

3. (Currently amended) The plant transfer and transplanting system of claim 1 wherein the dibbler plate soil/media dibbling means includes a set of dibblers attached coupled to on a the plate in a matrix formation matching a matrix formation of the plants in the

Attorney Docket: AT002

~~supply tray, for a particular supply tray to dibble a plurality of underlying multi-pot receiving flat in a matrix formation as the multi-pot receiving flat is moved upward or matching dibbler plate is moved downward.~~

4. (Currently amended) The plant transfer and transplanting system of claim 1 wherein the indexing frame is configured to move the plant supply tray(s) can be indexed in along an X or and Yy direction axis to move the supply tray(s) about the tray supporting table using electrical, hydraulic, pneumatic, mechanical and/or manual means.

5. (Currently amended) The plant transfer and transplanting system of claim 1 wherein the second table support/table for receiving multi-pots/flats includes manually, semi- automatically or automatically activated includes a conveying belt that indexing/conveying means to is configured to align a first plant receiving area to a transfer the respective plant receiving means to an appropriate planting position under the suction tubes or pushers where the transfer of plants actually takes place and a second plant receiving area to a dibbling position and under the dibblers where the dibbling of growth media takes place, operatively in time relationship to the indexing frames/supply trays.

6. (Currently amended) The plant transfer and transplanting system of claim 1 wherein the a-supporting frame includes vertical and horizontal frames (with/without casters) means for vertically moving the movably support upper and lower supports/first and second tables independently. tables so that they can move up and down in time relationship with dibbling, plant transferring and transplanting operations.

Attorney Docket: AT002

7. (Currently amended) The plant transfer and transplanting system of claim 1 wherein the plant dislodging removal mechanism means includes one or more an impulse vacuum systems for generating impulse vacuum inducing the suction forces to dislodge one or a plurality of plants/seedlings/plugs from a supply tray, through the opening(s) within the plant tray support/table, and conveying through tube into an underlying planting area.

8. (Currently amended) The plant transfer and transplanting system of claim 7 wherein the impulse vacuum system includes:

- a bellow with the a suction tube extending from the a matrix opening in within the first table plant tray support/table, wherein and the a lower end of the suction tube is attached to the a telescoping tube inside the bellow with a flexible door ant at its end; and

- an actuator for creating relative movement to expand the bellow to generate impulse vacuum at the suction tube which in turn induces a plant from the plant supply tray downwardly through the matrix opening(s) within the plant tray support/table and conveying through tube into an underlying planting area.

9. (Currently amended) The plant transfer and transplanting system of claim 7-8 wherein the bellow includes a pyramid shaped bellow so as to create a relatively larger initial impulse vacuum as the bellow is extended and retracted during the process of creating an impulse and an intermittent vacuum.

Attorney Docket: AT002

10. (Currently amended) The plant transfer and transplanting system of claim 7-8 wherein the outlet tube inside the bellow at the lower end of bellow includes a flexible door arrangement that will is configured to close tight in response to when a vacuum is created in the bellow thereby causing a the plant to be ejected downward and to shoot through the flexible door arrangement to effectuate plant transfer and transplanting.

11. (Currently amended) A method of matrix plant transfer and transplanting system comprising:

- (a) providing a plant supply tray comprising a plurality of plants;
- (b) placing the plant supply tray on a first table, the first table having a plurality of matrix openings arranged in a matrix formation;
- (c) aligning one or more plants in the plant supply tray with one or more matrix openings in the first table;
- (d) using a plant removal mechanism to extract the one or more plants from the plant supply tray;
- (e) transferring the extracted one or more plants to a plant receiving area via the one or more matrix openings in the first table; and
selecting a matrix pattern of underlying multi-pot receiving flat and matching opening plate, dibbler plate and pusher plate within one or a group of plant supply trays;
- (b) pushing down selected plants according to the matrix pattern to perform the transfer and transplanting; and thereafter;
- (ef) sequentially shifting the entire plant supply tray or trays to a second another position such that another one or more plants in the plant supply tray are aligned with one or more matrix openings in the first table like matrix of plants can be transferred

Attorney Docket: AT002

and wherein this process is continued until the entire supply tray or trays are emptied and the plants are transplanted into an underlying planting area.

12. (Currently amended) The method of claim 11 wherein using the plant removal mechanism includes activating an impulse vacuum system that pulls the one or more plants through the one or more matrix openings, including the step of exchanging with different set of receiving flat and matching opening plate, dibbler plate and pusher plate within the same one or the same group of plant supply trays.

13. (Currently amended) The method of claim 11 wherein using the plant removal mechanism includes pushing the one or more plants through the one or more matrix openings, including the step of exchanging with different set of receiving flat and matching opening plate, dibbler plate and pusher plate within the different one or different group of plant supply trays.

14. (New) The method of claim 11 further comprising:

- (g) moving the plant receiving area out of a planting position beneath the one or more matrix openings after the one or more plants have been transferred to the plant receiving area, while moving another plant receiving area into the planting position; and
- (h) repeating steps (d) through (i) until each of the plurality of plants in the supply tray is transferred to the plant receiving area.